

REMARKS

Claims 1, 4, 5 and 9 remain pending after amendment.

Claim Amendments

By this amendment, claim 1 is amended to more distinctly claim applicants' invention. Claim 1 is clarified by stating that "laterally separated" low stiffness regions R1 are provided consistent with applicants' Figure 3. Claim 1 is also amended to state that the high stiffness region is in a centrally-positioned portion of the crotch portion between laterally-separated low stiffness portions as shown in Figure 3. New claim 9 is added, support for which resides at page 9, lines 24-27, as well as the paragraph bridging pages 9 and 10. No new matter is added by this amendment.

Request for Interview

The undersigned requests an interview with the Examiner prior to examination of this response in order to discuss the outstanding issues that remain after this amendment.

Applicants' Invention

Applicants' invention is directed to a disposable diaper of a flat type. The claimed diaper is particularly easy to apply to a wearer who is in a standing position.

A significant aspect of the claimed invention is that the standing gathers on each side are fixed at an extension ratio of 100% or higher, and the tensile characteristics of the standing gathers on each side measured in their state not fixed to the diaper are such that the tensile load

required to extend to an effective extension ratio is 20 to 120 cN and that the increase rate of tensile load required for extending from an extension ratio of 20% up to the effective extension ratio is 1.0 cN/% or lower, the effective extension ratio being 30% lower than the fixing extension ratio.

Since the present invention satisfies the above limitation, especially taken together with the limitation of the bending stiffness of the absorbent member due to the presence of laterally separated low stiffness regions having a bending stiffness of 25 cN/50mm or lower, and a centrally disposed high stiffness region, it is remarkably easy to put the disposable diaper on a wearer in a standing posture.

The region of the crotch portion further has a high stiffness region R2 disposed between laterally separated low stiffness regions and having a bending stiffness of higher than 25 cN/50 mm in the diaper width direction, and wherein the low stiffness regions R1 are oblong regions provided along each lateral side edge of the absorbent member in the region of the crotch portion and adjacent the region of higher stiffness.

When disposable diapers of the flat type are placed on the wearer in a standing position, the crotch portion of the wearer is extremely narrow when compared with the case when putting on a diaper in a prone position. This is because the legs, when in a standing position, are not widely spaced unlike the case of a wearer lying on his or her back when the legs can be spread more widely. In addition, in order to put on a diaper adequately in a standing position, it is necessary to pull up the diaper which has been inserted into the narrow crotch portion of the wearer into a fitted position, while keeping the diaper curved into a U-shape in the longitudinal direction to some extent.

In this situation, when a diaper is provided with standing gathers, the gathers touch the wearer's thighs and impede diapering. It follows then that the diaper will fail to be properly applied to the fitted position.

In addition, in the case of the use of conventional gathers, the standing gathers fall or bend upon contacting the skin of the wearer when putting on a diaper in a standing position. A gap can thus form between the free end of the gathers and the skin of the wearer, through which body waste may easily leak.

It has been difficult for conventional diapers to solve the above problems, particularly with respect to the putting on of the diaper while the wearer is in a standing position.

The present invention succeeds in solving the above problems, in part, by providing standing gathers which extend with smaller force than that of the standing gathers of conventional diapers (*the increase rate of tensile load required for extending from an extension ratio of 20% up to the effective extension ratio is 1.0 cN/% or lower*) and have a higher extension ratio than that of the standing gathers of conventional diapers (*an extension ratio of 100% or higher*).

As a result, when putting a diaper on a wearer in the standing position, since the standing gathers of the present invention tend to appropriately contract while the diaper curves into a U-shape in the longitudinal direction, the gathers rise up while putting on the diaper, and those free ends naturally move toward the appropriate position during wear. Thus, the standing gathers are prevented from falling or bending when putting on the diaper.

In addition, in a circumstance where the diaper is pressed against the skin of the wearer, the standing gathers extend, and the elastically restoring force works to separate the diaper from

the wearer. However, in the present invention, since the gather has a small increase rate of tensile load, the force for separating the diaper from the wearer is weak, even in a condition where the diaper is pressed against the skin of the wearer to some extent. Thus, the standing gather of the present invention seldom inhibits smooth or comfortable wearing of the diaper.

The claimed invention is neither disclosed nor suggested by the cited prior art.

Rejection of Claims 1 and 4-5

Claims 1 and 4-5 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Okuda et al '140. This rejection respectfully is traversed.

Okuda et al is directed to an absorbent article having a liquid-permeable topsheet, a liquid-impermeable antileakage sheet, a liquid-retentive absorbent core, and a substantially elongate shape, with upstanding guards formed on opposing side portions.

In support of the rejection, the Examiner takes the position that Okuda:

“discloses disposable diaper 1 including absorbent core 4 with free end region 64 having a larger stress in the crotch portion of the wearer so that the standing property of the parallel spaced upstanding guard/standing gather 6 improves the fit to prevent leakage caused by crossing over of upstanding guard/standing gather 6 (page 7, ll 25-29, figure 4), fastening tape/band fastening member 11 on each side edge of wasteband (page 3, ll 5-7, figure 1), stress of the upstanding guard elastic member 64 disposed at the longitudinal free end/high stiffness region 63 of 10-1000 gf and preferably greater by from 5-500 gf than that of all the remaining upstanding guard elastic members 64 between laterally spaced low stiffness regions (low stiffness regions are considered to be any region outside of high stiffness region 63) (page 14, ll 10-12 and fig. 1)”

In response, applicants submit that the cited reference fails to teach or suggest the claimed invention.

Initially, while the Examiner focuses on portions of the absorbent article of the reference having greater “stress”, applicants’ claims provide for areas of low and high “stiffness” which are distinct from those portions referred to by the Examiner in the reference. The Examiner’s attempt to equate the two is without factual basis.

Okuda is silent with regard to “stiffness”. The stress in the standing gather 6 of Okuda is a force different from the bending stiffness of the claimed invention. The present invention defines the bending stiffness in the widthwise direction, whereas Okuda defines the stress in the longitudinal direction. Thus, apart from any differences between “stiffness” and “stress”, the respective directions as defined in the present invention and Okuda are different.

Further, in Okuda, a plurality of thread rubbers are in spaced arrangement to each other when placing the elastic members in the standing gather. The elastic members are also not fixed to the topsheet in the crotch portion where the absorbent member is arranged. When placing the elastic members in spaced relationship to each other, the bending stiffness in the widthwise direction does not change. When the diaper is bent in the widthwise direction, the elastic members move in the widthwise direction, and the width of the standing gather changes. Therefore, although the Examiner asserts that the requisite bending stiffness in the widthwise direction occurs in Okuda, such is not the case.

The stress of Okuda occurs as a result of sheet 61 of the standing gather and the elastic members 64 being spaced from each other, when putting on the diaper, and this stress means a force of the standing gather pressed to the legs of the wearer. Okuda teaches to differentiate the stress, which means that the region having different stress forces to the leg are present in the

standing gathers. This stress is totally different from the bending stiffness of the diaper. The bending stiffness of the present invention means that of the diaper itself when not in use.

By way of further explanation, the claimed invention includes within the thickness direction in the crotch portion which includes the absorbent member both low stiffness regions R1 and a centrally disposed high stiffness region R2. The high stiffness region R2 can support the diaper in the longitudinal direction when the crotch portion of the diaper is held by hand. Accordingly, the advantageous effect as described at page 18 of the specification is exhibited. When a diaper is placed on a wearer who is in the standing position, the diaper must be placed within the narrow space of the crotch of the wearer. Due to the presence of the low stiffness regions R1, the diaper of the claimed invention is easy to contract in the diaper width direction, whereby the diaper can be easily placed on the wearer.

Neither such advantages, nor the means by which such advantages are achieved, are disclosed nor suggested by the cited reference.

It can be seen from Figure 1 of the reference that the side flap 7 includes the standing gather 6 located such that it partly covers the absorbent member in overlapping relationship. The reference discloses that the stress of the free end 65 of the standing gather 6 is larger than the stress of the central region 66 and the basal region 67.

The stiffness value of the present invention is determined without reference to any properties of the standing gathers. Assuming that the stiffness is measured by including the standing gather, the stiffness of that portion may be slightly higher due to the presence of the standing gather on the absorbent member. However, in the diaper of Okuda, the stiffness in the central region in the widthwise direction located between a pair of the standing gathers 6,6 is

low, and the stiffness of the region provided with the standing gathers 6,6 on both sides of the central region is higher. This structure is opposite to that of the claimed invention which defines high stiffness as residing in the centrally disposed region, and low stiffness in laterally spaced sides thereof.

Applicants' areas of high and low stiffness do not reside in the flap portions of the diaper as asserted by the Examiner. Instead, the high and low stiffness regions are within the portion of the crotch portion which contains the absorbent member. Applicants' attention is directed to Figure 3 of the instant application in this regard. Indeed, the high stiffness portion is positioned between laterally separated areas of low stiffness.

It is further noted that the stress of the free end 65 of the standing gather 6 of the reference is larger than the stresses of the central region 66 and the basal end region 67 – however, the bending stiffness in the widthwise direction of the standing gather (perpendicular to the direction of the elasticized member of the flap) does not change.

New claim 9 defines an embodiment whereby the low stiffness region is provided by modifying the basis weight of the absorbent member in a region where it is desired to have the low stiffness region. Such an embodiment is also neither disclosed nor suggested by the cited prior art.


In view of the above, the reference cannot be said to disclose or suggest the claimed invention. The rejection is accordingly without basis and should be withdrawn.

In view of the above, the application is believed to be in condition for allowance, and an early indication of same is earnestly solicited.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.


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Respectfully submitted,

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